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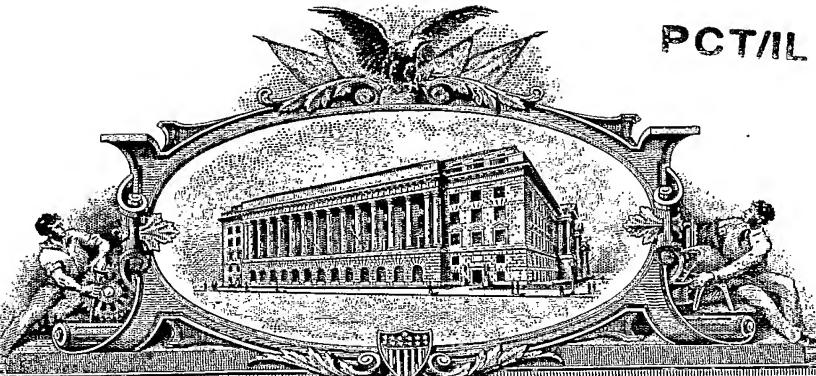
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APPLICATION NUMBER: 60/635,719

FILING DATE: December 13, 2004

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PTO/SB/16 (5-04)

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This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

16800 U.S. PTO  
60/635719

121304

### INVENTOR(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Hillel Anatoly David Carmi	SOLOW SELDIN MAIL BOGOT	Israel Israel Israel Israel

Additional inventors are being named on the \_\_\_\_\_ separately numbered sheets attached hereto

### TITLE OF THE INVENTION (280 characters max)

DIGITAL RIGHTS MANAGEMENT SYSTEM FOR MULTIMEDIA MESSAGES PROTECTION AND TRACKING

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<input checked="" type="checkbox"/> Firm or Individual Name	L. Friedman				
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Address	120 S. Riverside Plaza, 22nd Floor				
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### ENCLOSED APPLICATION PARTS (check all that apply)

<input checked="" type="checkbox"/> Specification Number of Pages including Appendices A&B	<b>62</b>	<input type="checkbox"/> CD(s), Number	
<input checked="" type="checkbox"/> Drawing(s) Number of Sheets	<b>3</b>	<input checked="" type="checkbox"/> Other (specify)	Cert. of Exp. Mail EV592968278US; return receipt postcard
<input checked="" type="checkbox"/> Application Data Sheet. See 37 CFR 1.76			

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The invention was made by an agency of the United States Government or under a contract with an agency of the  
United States Government.

No.

Yes, the name of the U.S. Government agency and the Government contract number are: \_\_\_\_\_

Respectfully submitted,

Date **12/13/04**

SIGNATURE 

REGISTRATION NO.

**37,135**

TYPED or PRINTED NAME **L. Friedman**

(if appropriate)

**7251/93484**

TELEPHONE **312-655-1500**

Docket Number:

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Effective 10/01/2004. Patent fees are subject to annual revision.

 Applicant claims small entity status. See 37 CFR 1.27TOTAL AMOUNT OF PAYMENT (\$)  
\$200.00

## Complete if Known

Application Number	
Filing Date	13 December 2004
First Named Inventor	SOLOW et al.
Examiner Name	
Art Unit	
Attorney Docket No.	7251/93484

## METHOD OF PAYMENT (check all that apply)

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## 1. BASIC FILING FEE

Large Entity	Small Entity	Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1001	790	2001	395	Utility filing fee	
1002	350	2002	175	Design filing fee	
1003	550	2003	275	Plant filing fee	
1004	790	2004	395	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	200.00
SUBTOTAL (1)		(\$)		\$200.00	

## 2. EXTRA CLAIM FEES FOR UTILITY AND

Extra Claims	Fee from below	Fee Paid
Total Claims <b>-20** = 0</b>	<b>0</b>	<b>0.00</b>
Independent Claims <b>- 3** = 0</b>	<b>0</b>	<b>0.00</b>
Multiple Dependent		

Large Entity	Small Entity	Fee Description
Fee Code (\$)	Fee Code (\$)	
1202	18	2202 9 Claims in excess of 20
1201	88	2201 44 Independent claims in excess of 3
1203	300	2203 150 Multiple dependent claim, if not paid
1204	88	2204 44 ** Reissue independent claims over original patent
1205	18	2205 9 ** Reissue claims in excess of 20 and over original patent
SUBTOTAL (2)		(\$)
		0.00

\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

## 3. ADDITIONAL FEES

Large Entity	Small Entity
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Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1051	130	2051 65 Surcharge - late filing fee or oath	
1052	50	2052 25 Surcharge - late provisional filing fee or cover sheet	
1053	130	1053 130 Non - English specification	
1812	2,520	1812 2,520 For filing a request for ex parte reexamination	
1804	920*	1804 920* Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805 1,840* Requesting publication of SIR after Examiner action	
1251	110	2251 55 Extension for reply within first month	
1252	430	2252 215 Extension for reply within second month	
1253	980	2253 490 Extension for reply within third month	
1254	1,530	2254 765 Extension for reply within fourth month	
1255	2,080	2255 1,040 Extension for reply within fifth month	
1401	340	2401 170 Notice of Appeal	
1402	340	2402 170 Filing a brief in support of an appeal	
1403	300	2403 150 Request for oral hearing	
1451	1,510	1451 1,510 Petition to institute a public use proceeding	
1452	110	2452 55 Petition to revive - unavoidable	
1453	1,370	2453 685 Petition to revive - unintentional	
1501	1,370	2501 685 Utility issue fee (or reissue)	
1502	490	2502 245 Design issue fee	
1503	660	2503 330 Plant issue fee	
1460	130	1460 130 Petitions to the Commissioner	
1807	50	1807 50 Processing fee under 37 CFR § 1.17(q)	
1806	180	1806 180 Submission of Information Disclosure Statement	
8021	40	8021 40 Recording each patent assignment per property (times number of properties)	
1809	790	2809 395 Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810 395 For each additional invention to be examined (37 CFR § 1.129(b))	
1801	790	2801 395 Request for Continued Examination (RCE)	
1802	900	1802 900 Request for expedited examination of a design application	
Other fee (specify) _____			

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SUBTOTAL (3)

(\$)

## SUBMITTED BY

Name (Print/Type)	L. Friedman	Registration No. (Attorney/Agent)	37,135	Telephone	312-655-1500
Signature				Date	13 December 2004

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Patentee: SOLOW et al.  
Title: DIGITAL RIGHTS MANAGEMENT SYSTEM FOR  
MULTIMEDIA MESSAGES PROTECTION AND  
TRACKING  
Serial No.:  
Filing Date: 13 December 2004  
Docket No. 7251/93484

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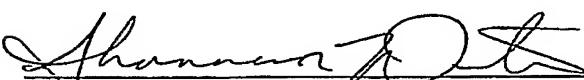
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**DIGITAL RIGHTS MANAGEMENT SYSTEM FOR MULTIMEDIA MESSAGES  
PROTECTION AND TRACKING**

**FIELD OF THE INVENTION**

The present invention relates to content protection for multimedia content.

**BACKGROUND OF THE INVENTION**

Background technologies relevant to understanding the present invention include:

- Simple Object Access Protocol (SOAP), which is described on the World Wide Web at: [www.w3.org/2000/xp/Group/](http://www.w3.org/2000/xp/Group/)
- SOAP Security Extensions: Digital Signature (SOAP DSIG), which is described on the World Wide Web at: [www.w3.org/TR/SOAP-dsig/](http://www.w3.org/TR/SOAP-dsig/)

The disclosures of all references mentioned above and throughout the present specification (including, without limitation, references mentioned in Appendix A), as well as the disclosures of all references mentioned in those references, are hereby incorporated herein by reference.

## SUMMARY OF THE INVENTION

The present invention, in preferred embodiments thereof, provides a system and method for content protection for multimedia content distributed in a mobile network by Multimedia Message Service Center (MMSC). In preferred embodiments, the system includes a Digital Rights Management (DRM) server connected to the MMSC by a dedicated DRM protocol and/or by connection via selected MMSC protocols, adapted and modified for DRM information transfer. The system may also include a DRM User Agent (UA) on mobile handsets.

## BRIEF DESCRIPTION OF THE DRAWINGS AND APPENDIX

The present invention will be understood and appreciated more fully from the following detailed description, taken in conjunction with the drawings in which:

Fig. 1 is a simplified block diagram illustration of a 3GPP MMSC System having an MM9 interface;

Fig. 2 is a simplified block diagram illustration of a Multimedia Message Service Center (MMSC) including a Digital Rights Management (DRM) server and communicating through a DRM protocol which can be implemented as a stand-alone protocol and/or a combination of modifications of existing MM protocols (e.g. MM7, MM1), constructed and operative in accordance with a preferred embodiment of the present invention; and

Fig. 3 is a simplified block diagram illustration of a Multimedia Message Service Center (MMSC) including a Digital Rights Management (DRM) server, constructed and operative in accordance with another preferred embodiment of the present invention.

The following appendices will aid in understanding the detailed description:

Appendix A, which is a particularly detailed description of one preferred implementation of an interface between a service provider and a DRM Server; and

Appendix B, which is a general representation of major use cases, outlining one preferred implementation of an interface between DRM server and MMSC.

## DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Reference is now made to Fig. 1, which is a 3GPP MMSC System diagram with an additional MM9 interface. Fig. 1 is based on the standard MMSC architecture as it is defined by 3GPP in reference [1] (a copy of which may be found on the World Wide Web at: [webapp.etsi.org/action%5CPU/20040120/ts\\_123140v050900p.pdf](http://webapp.etsi.org/action%5CPU/20040120/ts_123140v050900p.pdf)) with the addition of a transcoder node connected by MM9 protocol.

It is appreciated that MM9 is not fully standardized yet and its implementation may differ and may have proprietary extensions and modifications for each MMSC and transcoder vendor.

The DRM System for Multimedia Message (MM) protection preferably comprises, at the server side, one of the following:

I)

A DRM component, integrated within the MMSC through a dedicated protocol, similar to the current approach to MMSC - transcoder interconnection, as shown in Fig. 2. The dedicated protocol could be very similar to that described in Appendix A and illustrated in use cases in Appendix B, with additional support for extended business models if desired. (It is appreciated that Appendix A comprises a particularly detailed description of one preferred implementation of an interface between a service provider and a DRM Server and Appendix B comprises a general representation of major use cases outlining one preferred implementation of an interface between DRM server and MMSC; the examples of Appendix A and Appendix B are not meant to be limiting).

II)

Stand-alone server(s) acting like a network probe and/or proxy, as shown in Fig. 3.

The system of Fig. 3 preferably protects / tracks content following the steps below. The DRM Server preferably:

1. Listens to MM7 protocol analyzing *MM7\_submit.REQ* messages.
2. For each message, extracts from the message Value Added Service Provider (VASP) ID and Value Added Service (VAS) ID and compares them with a pre-defined list of the content vendors IDs that request content protection/tracking. If the content protection/tracking was required, then:
3. Generates hash data which uniquely identifies MM content and stores this data in the DRM DB together with other data about the message, such as, for example VASP & VAS IDs, message recipient(s) address(es)/distribution list(s), submission timestamp, subject, service code, message class, message distribution indicator and other appropriate parameters. Data hash technology is well-known in the art; any appropriate data hash technology may be used.
4. Optionally, analyzes content and replaces it by the same content with a watermark. This could be used with or instead the content hashing as described in step 3 immediately above

5. Analyzes every message transferred via proprietary MMSC-transcoder protocol (MM9). For messages, passed from MMSC to the transcoder, the DRM Server generates content hash and/or looks for content watermark. The generated hash is compared with the stored hashes (or the found watermark compared with DB stored watermarks). If the same hash/watermark is found in the DRM DB, the incoming (to transcoder) message is marked as “to be protected/tracked” by storing incoming message parameters such as transaction ID, message ID or similar. Persons skilled in the art will appreciate that specific implementation details depend on the MMSC-transcoder protocol details, which differs for various vendors.
6. Verifies the same parameters (transaction ID, message ID or similar) for any outgoing (from transcoder) message while listening to MM9 protocol. If the message should be protected, the DRM Server encrypts content, fully or partially. Every attachment can be protected individually by using different algorithms and/or keys or all the attachments can be encrypted together with the single key. Any appropriate encryption algorithms and key management and key delivery mechanisms may be used.
7. Generates an additional post-transcoding hash data for the transcoded content and stores this data in the DRM DB.

Then the message is delivered by MMSC, preferably using standard methods known in the art, to the recipient MMS UA.

In order to implement the protection for the super distribution (i.e., forwarding all the content items received within the MM or selected content items only from one mobile subscriber to the another one) in case of Multimedia Message (MM) submitting (which may occur when only selected attachments of received MM are forwarded) and MM forwarding (entire MM), the DRM server preferably:

1. Listens to MM1 protocol and analyzes every *MM1\_submit.REQ* message by generating a content hash. The hash is compared to the “post-transcoding” hashes in the DRM DB. If the generated hash matches a hash in the DB:
2. Registers message parameters such as originator, recipients list, timestamp and others as appropriate.
3. Verifies the rights of the recipient(s) to receive the message. If the recipient(s) is not allowed to receive the message, e.g. the MM was requested to be forward-locked by the content or service provider, the DRM Server may:
  - a. Silently ignore the MM forward attempt.
  - b. Inform the MM originator that the delivery is not allowed, by SMS, MMS, WAP push or other allowed methods.
  - c. Inform MM recipient that there was a MM forwarding attempt.

If the message delivery to the recipient(s) is allowed, optionally the DRM Server may request the recipient to purchase the appropriated rights for the forwarded content first and execute all the steps below only when the purchase confirmation will be received. If the DRM Server is allowed to deliver the message:

4. Decrypts content and replace the encrypted attachments by clear content inside the *MM1\_submit.REQ* message. Then the message is delivered to the MMSC

Server/Relay which in turn may pass it to the transcoder. Further operations are defined in steps (5)-(7) for MM9 above.

5. In addition, listens to MM1 protocol and analyzes every *MM1\_retrieve.REQ* and *MM1\_retrieve.REQ* messages, extracting message reference, typically in the form of a Universal Resource Identifier (URI), which URIs are well-known in the art, from *MM1\_retrieve.REQ* and storing the message reference in the DRM DB if content hash generated by the DRM Server for content passed in *MM1\_retrieve.RES* matches with a hash stored in the DRM DB.
6. Listens to *MM1\_forward.REQ*, extracting message URI and comparing with the stored URIs. For the matching URIs, registers in the DRM DB the recipient's address and originator address presented in *MM1\_forward.REQ* message.

Additionally, persons skilled in the art will appreciate that the DRM server preferably, in both cases (I and II), provides portal functionality for the DRM UA to supply keys as necessary, both on DRM UA request or provided by DRM Server by an appropriate push method such as SMS, WAP push or MMS.

At the handset side the DRM User Agent (UA) implementation can be one of the following:

- 1) No DRM UA

In this case the DRM Server alone preferably supports the following business models: content tracking, network forward lock (with/without notification of the originator), controlled super distribution.

- 2) DRM UA built-in the MMS UA.

3) DRM UA acting as a stand-alone application / group of applications (such as, for example, a Symbian recognizer [which is well-known in the art and described on the World Wide Web at:

[www.symbian.com/developer/techlib/v70sdocs/doc\\_source/devguides/cpp/applicationframework/recognizersoverview.guide.html](http://www.symbian.com/developer/techlib/v70sdocs/doc_source/devguides/cpp/applicationframework/recognizersoverview.guide.html)] + UA) or as a part of a third-party stand-alone application (DRM UA for a player or browser), when the application is associated with the protected content types (and called by the Operating System (OS) when a MMS with protected content is received)

- 4) DRM UA acting as a part of the native phone software (OS, drivers etc)

(including any HW implementation) – in the most common case is the same as (1); other options: part of a web/WAP browser.

For cases (2)-(4) DRM Server and DRM UA will support any appropriate business model implemented in the given DRM System, e.g., pay-per-count, pay-per-time, rental or permanent purchase.

In certain preferred embodiments of the present invention, comparing of a hash to “post-transcoding” hashes stored in the DRM DB, as described above, may aid in providing optimally transcoded content to a recipient. When a super distribution request is received, including content which the requester wishes to distribute, the content is identified by comparing a hash of the content to stored “post-transcoding” hashes in the DRM DB. The DRM DB preferably also stores the original “pre-transcoded” content, associated with one or more of the “post-transcoding” hashes.

Persons skilled in the art will appreciate that the original content can thus be easily identified. The original content can then be optimally transcoded for the new recipient.

In certain preferred embodiments of the present invention, DRM is applied in the DRM Server on a "best effort" basis, as described below.

There are different types of content protection that a DRM-enabled device can apply. There are some devices that have only one type (typically a simple type, such as OMA DRM v1 forward lock) of content protection. Other, more sophisticated or newer devices implement multiple DRM methods, such as OMA DRM v1 forward lock, OMA DRM v1 combined delivery, and OMA DRM v1 separate delivery, all of which are well-known in the art. There are (or are soon expected to be) some commercially available devices that implement the OMA DRM v2 standard, which is backward compatible and therefore includes all the methods of OMA1. In addition or instead, a mobile device can have any proprietary DRM solution installed. For instance, SonyEricsson has implemented some devices with their own proprietary forward-lock method for content protection.

In this situation of multiple DRM choices available at a single device it is uncertain which content protection method the DRM Server should pick up for a specific mobile device if a service or content provider did not specify explicitly what type of content protection they want to apply. In such a case, where not specific type of content protection has been requested, the inventors of the present invention believe that "best effort", as described herein, is preferred.

In "best effort", the DRM Server preparing content to a certain mobile device or a group of similar models will always use the protection method allowing the highest security level for the given model or a group of models. To achieve this result, the DRM Server consults UAProf (User Agent Profile) data, published by the device manufacturer, which includes the DRM capabilities of the device; alternatively the DRM Server uses its own knowledge of the DRM methods the device can apply. Since the DRM Server can be integrated within a content delivery service, the content delivery service can provide the Server with the knowledge of whether the mobile device has any DRM Agent installed and of what type. For example, if a user downloaded an DRM-enabled player from a content portal, the portal can inform DRM Server which user has received which DRM agent. Alternatively, if content protection procedures have been initiated by the user with involvement of the DRM Agent, the agent software may report its version to the DRM Server, thus providing the DRM Server with the information about available DRM version.

The DRM Server DB is also preferably continuously or periodically updated with information about new phone models and their DRM abilities, thus allowing the DRM Server to use the strongest protection afforded by a new device when the new device arrives to the market.

Preferably, the “best-effort” protection technique means that in case that the requested DRM protection method is unavailable for the given handset type, the DRM Server will try to use the most secure DRM protection method available for the given handset according to the best DRM Server knowledge for the requested content, also taking in account the content’s MIME type. For instance, if a service provider asks for the “Separate Delivery” DRM method and specifies “Nokia 3650” handset type, which implements the OMA DRM v1 forward lock functionality only, the DRM server will return an appropriate error together with content protected according to OMA forward lock protection rules, thus providing “best-effort” protection.

Reference:

[1] ETSI TS 123 140 V5.9.0 (2003-12)  
Digital cellular telecommunications system (Phase 2+);  
Universal Mobile Telecommunication System (UMTS);  
Multimedia Messaging Service (MMS);  
Functional description;  
Stage 2  
(3GPP TS 23.140 version 5.9.0 Release 5)

It is appreciated that various features of the invention which are, for clarity, described in the contexts of separate embodiments may also be provided in combination in a single embodiment. Conversely, various features of the invention which are, for brevity, described in the context of a single embodiment may also be provided separately or in any suitable subcombination.

It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the scope of the invention is defined only by the claims which follow:

What is claimed is:

**CLAIMS**

1. Apparatus substantially as described hereinabove.
2. Apparatus substantially as shown in the drawings.
3. A method substantially as described hereinabove.
4. A method substantially as shown in the drawings.
5. A system substantially as described hereinabove.
6. A system substantially as shown in the drawings.

FIG. 1

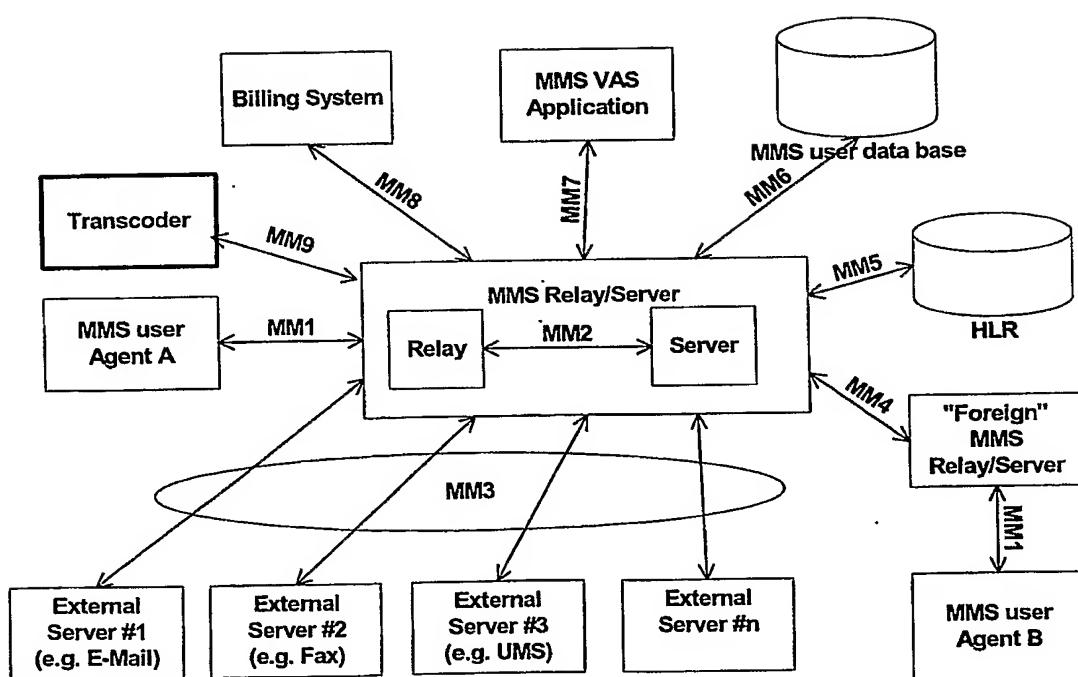


FIG. 2

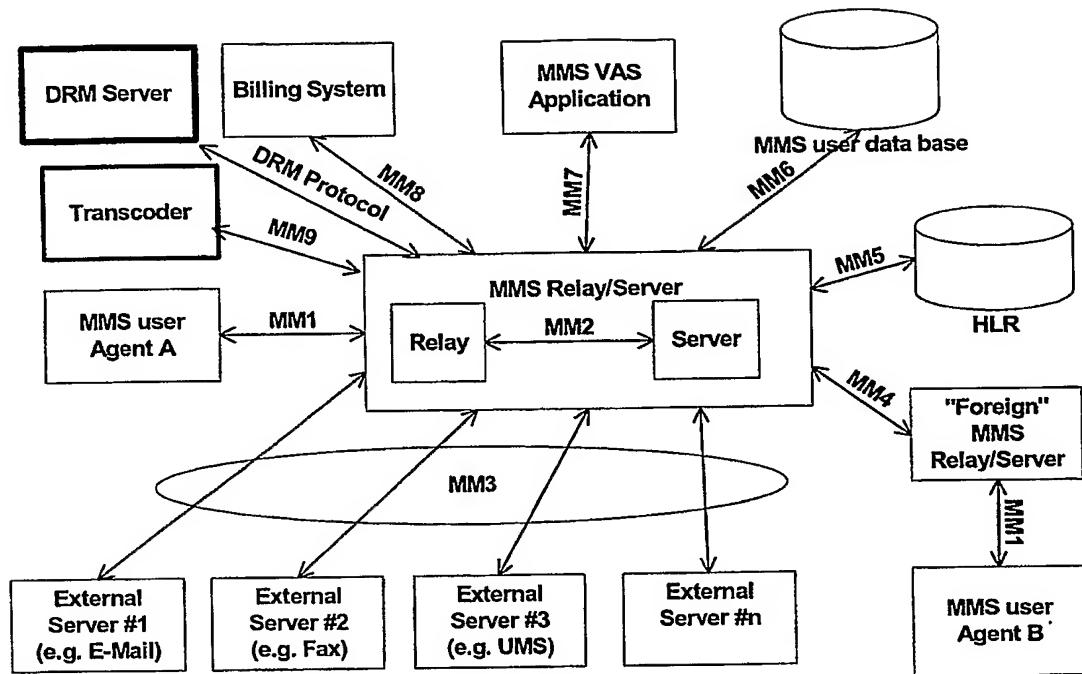
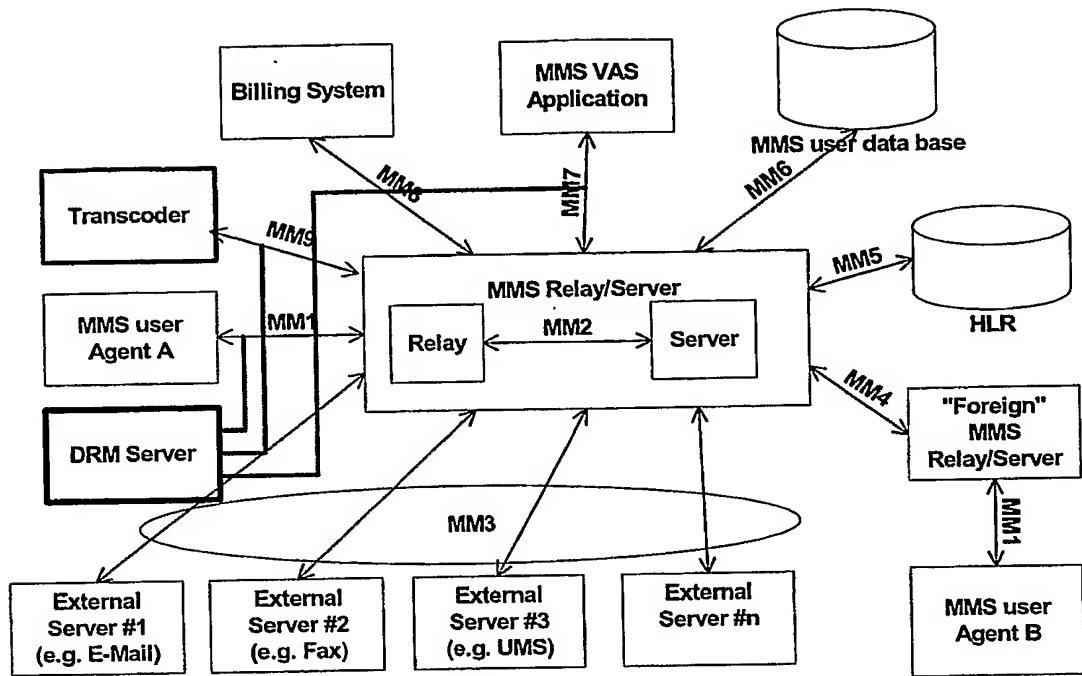


FIG. 3



## Application Data Sheet

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State or Province:: Illinois  
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Fax:: (312) 655-1501

## Application Information

Title Line:: DIGITAL RIGHTS MANAGEMENT SYSTEM  
FOR MULTIMEDIA MESSAGES  
PROTECTION AND TRACKING  
Total Drawing Sheets:: 3  
Application Type:: Provisional  
Docket Number:: 7251/93484

## Representative Information

Representative Customer Number: 24628

## Assignee Information

Assignee Name: NDS Limited  
Assignee Address: One London Road  
Staines, Middlesex TW18 4EX  
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**APPENDIX A**

**DRM Server Service Provider API**

# DRM Server Service Provider API

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## 1. Scope

This document describes the interface between the Service Provider (SP) and NDS Digital Rights Management (DRM) server.

## 2 Related Documents

Doc. Designation	Document Title
[1] OMA-Download- DRMCF-v1_0- 20031113-C:	OMA DCF file format
[2] OMA-Download- DRM-V1_0- 20031031-C:	OMA DRM
[3] OMA-Download- DRMREL-V1_0- 20031031-C	OMA DRM Rights expression language

The OMA reference documents listed above can be found at the following URL:

[http://www.openmobilealliance.org/release\\_program/enabler\\_releases.html](http://www.openmobilealliance.org/release_program/enabler_releases.html)

### 3 Overview

This interface defines communication between the service provider and NDS DRM server. The main functions of the interface are:

- Protecting content
- Generating a Rights Object (RO) to regulate content rendering by a Mobile Subscriber (mobile subscriber)

The interface supports all types of content protection (Forward Lock, Combine Delivery, Separate Delivery) and full functionality of ROs defined in [3]. RO functionalities are triggered by a mobile subscriber request to a service provider. The structure of the mobile subscriber request is outside the scope of this specification.

Additional functionalities required for the DRM server but not included in the interface definition below are:

- Service provider registration/authentication
- Mobile subscriber registration/authentication

The SP registration is triggered by the Management Station (MGMS). The MGMS shell registers each SP and SP service in the DRM server. The SP registration protocol, as well as SP authentication, is outside the scope of this specification.

Mobile subscriber authentication is performed by the SP upon a mobile subscriber's request for content. The registration/authentication can include the mobile subscriber identity, e.g., MSISDN, XID, cookies as well as the handset type (e.g. Nokia 6220) used by mobile subscriber.

### 3.1 DRM System Component Interaction

Figure 1 below describes how the DRM system components interact.

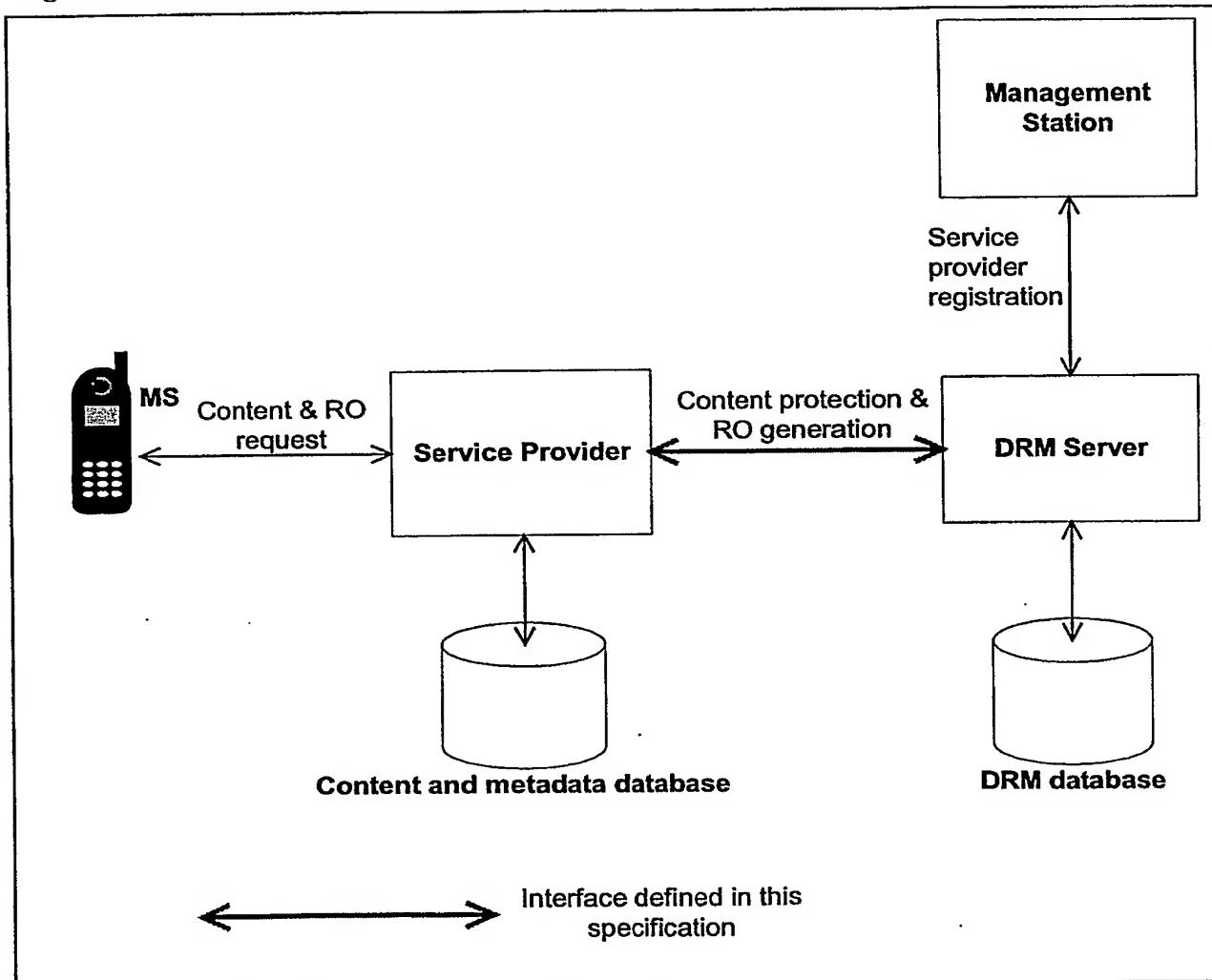


Figure 1: Overview. DRM System Component Interaction

### 3.2 DRM Server's Role

In the scope of this document, the DRM server protects content and generates the RO for the content consumption by the mobile subscriber. The DRM server role is to optimally protect content for each mobile subscriber's handset, providing each handset with the best security level it can accept.

For example: if a specific handset supports the Forward Lock protection method only, the content for this handset should be Forward Lock-protected. If another handset supports both Forward Lock and Separate Delivery protection methods, the content for this handset should be protected by the Separate Delivery method and an appropriate RO should be generated and delivered to the handset as defined in specifications [2], [3].

The content protection method is chosen by the DRM server according to the content's handset type and MIME type. Choosing a content protection method is transparent to the SP.

## 4. Interface Principles

The interface described in this document uses Simple Object Access Protocol (SOAP) for the messages exchange.

### 4.1 Service Provider Authentication

SP authentication is performed by the DRM server during the communication session with the SP. The authentication details are outside the scope of this document.

### 4.2 Mobile Subscriber Registration/Authentication

Mobile subscriber authentication (both Mobile Subscriber ID and Mobile Subscriber type) is performed by the SP. The SP is responsible for transferring the Mobile Subscriber ID and handset type to the DRM server.

### 4.3 Permissions Handling

The SP must provide the DRM server with all information needed for content protection and RO generation. One of the parameters necessary for RO generation is permission as defined in [3]. Permissions are the part of the business scenario associated with the content, e.g., how often can content be viewed. The business scenario defines how content can be bought by the mobile subscriber. The sequence for implementing permissions for a mobile subscriber is as follows:

1. The mobile subscriber selects the content.
2. The mobile subscriber purchases rights for the content.
3. The SP sends the permissions associated with these rights and the handset model name to the DRM server.
4. The DRM server checks the handset type to determine whether permissions can be implemented.

For example, if the handset supports only Forward Lock protection (Nokia 6600), then permissions such as "play 5 times" cannot be implemented. If the handset is able to implement all permissions, the content will be optimally protected by the handset and an RO will be generated if needed. If the handset is not able to implement certain permissions, the DRM server will implement the best content protection available. Notification, with an error code, will be sent to the SP.

Optionally, an SP can request from the DRM server a list of permissions that the particular handset type can implement for a particular asset type. This information can be used by the SP to display to the mobile subscriber only the permissions that the handset can implement.

#### **4.4 Security Considerations**

The SOAP digital signature (SOAP DSIG) can be used to secure communication between the SP and the DRM server.

#### **4.5 Real Time Asset Protection**

The DRM server supports both real time and pre-encrypted asset protection.

## 5 Interface Structure

The interface structure supports SOAP communication, where each transaction consists of request and response XML messages transferred over HTTP.

1. Protect content request
  - a. RT-ProtectContent-reqRequest
  - b. ProtectContentResponse
2. RO request
  - a. RO-reqRequest
  - b. RO-Response
3. DRM permission request
  - a. DRM-permission-reqRequest
  - b. DRM-permission-Response

## 6

## XML Parameter Description

Table 1 below describes the interface parameters.

**Table 1: Parameter Description**

Parameter Name	Description
Version	This parameter defines the interface version.
SrvId	This parameter uniquely identifies the service in the DRM server.
BinaryRO	RO in WBXML format.
cid	Unique identifier generated by DRM server per each content encryption. Is defined in the DCF header [1].
MobSubsId	Mobile subscriber ID. This complex parameter uniquely identifies the subscriber in the network.
MobSubsIdType	Sub-parameter of MobSubsId. This parameter defines which type of identification is used by the SP.
MobSubsIdValue	Sub-parameter of MobSubsId. This parameter defines the ID value used, according to the chosen type.
MS_model	Mobile subscriber handset model
TsourceContent	This complex parameter incorporates all source (clear) content parameters used by the DRM server to protect content.
SourceContentID	Sub-parameter of tSourceContent. Unique ID of the clear content per SP. This parameter is managed by SP and provided to DRM server as part of the RtProtectContentReq request.
ContentName	Sub-parameter of tSourceContent. This parameter is used in the DCF header, see [1].

Parameter Name	Description
ContentDescription	Sub-parameter of tSourceContent. The parameter is optional. This parameter is used in the DCF header, see [1].
MIME_type	Sub-parameter of tSourceContent. This parameter defines the MIME type of clear content.
EncodingType	Sub-parameter of tSourceContent. The parameter is optional. When SP issues an RO request for super distribution of the content, the DRM server compares this parameter with the EncodingType parameter of the mobile subscriber. In case of encoding type incompatibility, notification will be sent to SP.
ContentProviderWeb	Sub-parameter of tSourceContent. The parameter is optional. This parameter is used in the DCF header see [1]. The default value of the parameter is configured in the DRM server configuration. The value from configuration is used if the parameter is absent from the RtProtectContentReq request.
ContentVendor	Sub-parameter of tSourceContent. The parameter is optional. This parameter is used in the DCF header see [1]. The default value of the parameter is configured in the DRM server configuration. The value from configuration is used if the parameter is absent in the RtProtectContentReq request.
SourceContentLocation	Sub-parameter of tSourceContent. The parameter is optional. This parameter defines the source content location. If the parameter is absent, the source (clear) content should be sent in the same HTTP stream as the RtProtectContentReq request.

Parameter Name	Description
SourceLocation	Sub-parameter of SourceContentLocation. This parameter defines the URL of the source content location.
SourceDownloadProtocol	Sub-parameter of SourceContentLocation. The parameter is optional. This parameter defines the protocol of the source content download (HTTP, FTP, file system).
SourceDownloadProxy	Sub-parameter of SourceContentLocation. The parameter is optional. The proxy is used for the source content download.
ProtectContentLocation	Sub-parameter of tSourceContent. The parameter is optional. This parameter defines protected content location. If this parameter is absent, the protected content should be sent in the same HTTP stream as the RtProtectContentReqResp message.
ProtLocation	Sub-parameter of ProtectContentLocation. This parameter defines the URL of the protected content location.
ProtUploadProtocol	Sub-parameter of ProtectContentLocation. The parameter is optional. This parameter defines the protocol of the protected content upload (HTTP, FTP, file system).
ProtUploadProxy	Sub-parameter of SourceContentLocation. The parameter is optional. The proxy is used for the protected content upload.
tAssetRights	Complex type, defines asset consumption rights.
Price	Sub-parameter of tAssetRights. Defines the price of the asset. The price is used for statistical purposes only.

Parameter Name	Description
Currency	Sub-parameter of Price. The parameter is optional. This parameter defines the currency is used for the price. The default value of the parameter is configured in the DRM server configuration per SP. The value from configuration is used if the parameter is absent.
Price-value	Sub-parameter of Price. The value that, along with currency, comprises the price.
Permission	Sub-parameter of tAssetRights. The parameter is optional. Permissions as defined in OMA1 (see [2]).
FLflag	Sub-parameter of tAssetRights. Forward Lock flag. The parameter is optional. If the parameter is present, the content must be protected as Separate Delivery with Forward Lock (see [2]).
tmsRights	Complex type defines the rights which can be implemented by the mobile subscriber for the specific MIME type.
Permission	Sub-parameter of tmsRights. Permissions as defined in OMA1 (see [2]).
FLflag	Sub-parameter of tmobile subscriberRights. Forward Lock flag. The parameter is optional. If the parameter present this means that the mobile subscriber of particular type supports Separate Delivery with Forward Lock protection type see [2]).
DRMstatus	Complex parameter. Defines the status of request execution.
ErrorCode	Sub-parameter of DRMstatus.
ErrorDescr	Sub-parameter of DRMstatus. This parameter is used to describe the error code. The parameter is optional.

## 7 Interface Messages

### 7.1 Content Protection Transaction

The request message and response message are defined in the upcoming sections.

#### 7.1.1 RT Protect Content Request Message

##### 7.1.1.1 Message definition

```
<message name="RtProtectContentReqRequest">
    <part name="Version" type="xsd:string"/>
    <part name="srvId" type="xsd:string"/>
    <part name="Source" type="nmdrm:tSourceContent"/>
    <part name="MobSubsId" type="nmdrm:tMobSubsId"/>
    <part name="mobile subscribermodel" type="xsd:string"/>
    <part name="AssetRights" type="nmdrm:tAssetRights"/>
</message>
```

### 7.1.1.2 Types used

#### complexType tSourceContent

diagram	<pre> classDiagram     class tSourceContent {         SourceContentID         ContentName         MimeType         EncodingType         ContentProviderWeb         ContentVendor         ContentDescription         SourceContentLocation         ProtectContentLocation     }     tSourceContent &lt; --&gt; ContentProviderWeb     tSourceContent &lt; --&gt; ContentVendor     tSourceContent &lt; --&gt; ContentDescription     tSourceContent &lt; --&gt; SourceContentLocation     tSourceContent &lt; --&gt; ProtectContentLocation   </pre>
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<u>SourceContentID</u> <u>ContentName</u> <u>MimeType</u> <u>EncodingType</u> <u>ContentProviderWeb</u> <u>ContentVendor</u> <u>ContentDescription</u> <u>SourceContentLocation</u> <u>ProtectContentLocation</u>
used by	<u><a href="#">tSourceContent</a></u>
source	<pre> &lt;xsd:complexType name="tSourceContent"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="SourceContentID" type="xsd:long"/&gt;     &lt;xsd:element name="ContentName" type="xsd:string"/&gt;     &lt;xsd:element name="MimeType" type="xsd:string"/&gt;     &lt;xsd:element name="EncodingType" type="xsd:string" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="ContentProviderWeb" type="xsd:string" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="ContentVendor" type="xsd:string" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="ContentDescription" type="xsd:string" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="SourceContentLocation" type="nmdrm:tSourceContentLocation" nillable="true" minOccurs="0"/&gt;       &lt;xsd:element name="ProtectContentLocation" type="nmdrm:tProtectContentLocation" nillable="true" minOccurs="0"/&gt;     &lt;/xsd:sequence&gt;   &lt;/xsd:complexType&gt;   </pre>

complexType tSourceContentLocation

diagram	<pre> classDiagram     class tSourceContentLocation     class SourceLocation     class SourceDownloadProtocol     class SourceDownloadProxy      tSourceContentLocation "1" -- "0..1" SourceLocation     tSourceContentLocation "1" -- "0..1" SourceDownloadProtocol     tSourceContentLocation "1" -- "0..1" SourceDownloadProxy   </pre>
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<u>SourceLocation</u> <u>SourceDownloadProtocol</u> <u>SourceDownloadProxy</u>
used by	<u>tSourceContent/SourceContentLocation</u> <u>tSourceContentLocation</u>
source	<pre> &lt;xsd:complexType name="tSourceContentLocation"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="SourceLocation" type="xsd:string"/&gt;     &lt;xsd:element name="SourceDownloadProtocol" type="xsd:string" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="SourceDownloadProxy" type="xsd:string" nillable="true" minOccurs="0"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt;   </pre>

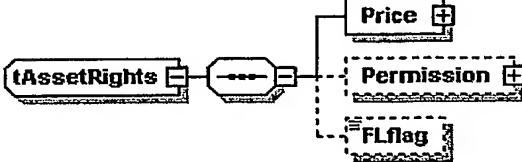
complexType tProtectContentLocation

diagram	<pre> classDiagram     class tProtectContentLocation     class ProtLocation     class ProtUploadProtocol     class ProtUploadProxy      tProtectContentLocation "3" --&gt; ProtLocation     tProtectContentLocation "3" --&gt; ProtUploadProtocol     tProtectContentLocation "3" --&gt; ProtUploadProxy   </pre>
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<u>ProtLocation</u> <u>ProtUploadProtocol</u> <u>ProtUploadProxy</u>
used by	<u>tSourceContent/ProtectContentLocation</u> <u>tProtectContentLocation</u>
source	<pre> &lt;xsd:complexType name="tProtectContentLocation"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="ProtLocation" type="xsd:string"/&gt;     &lt;xsd:element name="ProtUploadProtocol" type="xsd:string" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="ProtUploadProxy" type="xsd:string" nillable="true" minOccurs="0"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt;   </pre>

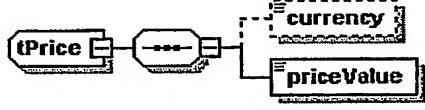
complexType tMobSubsId

diagram	<pre> classDiagram     class tMobSubsId     class MobSubsIdType     class MobSubsIdValue      tMobSubsId "3" --&gt; MobSubsIdType     tMobSubsId "3" --&gt; MobSubsIdValue   </pre>
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<u>MobSubsIdType</u> <u>MobSubsIdValue</u>
used by	<u>tMobSubsId</u>
source	<pre> &lt;xsd:complexType name="tMobSubsId"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="MobSubsIdType" type="xsd:string"/&gt;     &lt;xsd:element name="MobSubsIdValue" type="xsd:string"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt;   </pre>

complexType **tAssetRights**

diagram	
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<u>Price</u> <u>Permission</u> <u>FLflag</u>
used by	<u>tAssetRights</u>
source	<pre>&lt;xsd:complexType name="tAssetRights"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="Price" type="nmdrm:tPrice"/&gt;     &lt;xsd:element name="Permission" type="nmdrm:tPermission" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="FLflag" type="xsd:unsignedByte" nillable="true" minOccurs="0"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt;</pre>

complexType **tPrice**

diagram	
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<u>currency</u> <u>priceValue</u>
used by	<u>tAssetRights/Price</u> <u>tPrice</u>
source	<pre>&lt;xsd:complexType name="tPrice"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="currency" type="xsd:string" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="priceValue" type="xsd:float"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt;</pre>

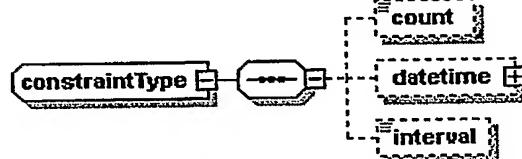
## complexType tPermission

diagram	<pre> classDiagram     class tPermission     class play     class display     class execute     class print      tPermission "0..1" *-- play     tPermission "0..1" *-- display     tPermission "0..1" *-- execute     tPermission "0..1" *-- print   </pre>
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<a href="#">play</a> <a href="#">display</a> <a href="#">execute</a> <a href="#">print</a>
used by	<a href="#">tAssetRights/Permission</a> <a href="#">tHS-Rights/Permission</a> <a href="#">tPermission</a>
source	<pre> &lt;xsd:complexType name="tPermission"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="play" type="nmdrm:tPermissionElement" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="display" type="nmdrm:tPermissionElement" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="execute" type="nmdrm:tPermissionElement" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="print" type="nmdrm:tPermissionElement" nillable="true" minOccurs="0"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt;   </pre>

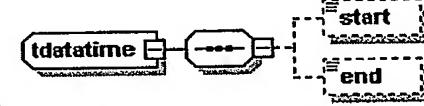
## complexType tPermissionElement

diagram	<pre> classDiagram     class tPermissionElement     class constraint      tPermissionElement "0..1" *-- constraint   </pre>
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<a href="#">constraint</a>
used by	<a href="#">tPermission/display</a> <a href="#">tPermission/execute</a> <a href="#">tPermission/play</a> <a href="#">tPermission/print</a> <a href="#">tPermissionElement</a>
source	<pre> &lt;xsd:complexType name="tPermissionElement"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="constraint" type="nmdrm:constraintType"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt;   </pre>

**complexType constraintType**

diagram	
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<u>count</u> <u>datetime</u> <u>interval</u>
used by	<u>tPermissionElement</u> / <u>constraint</u> <u>constraintType</u>
source	<pre> &lt;xsd:complexType name="constraintType"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="count" type="xsd:int" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="datetime" type="nmdrm:tdatetime" minOccurs="0"/&gt;     &lt;xsd:element name="interval" type="xsd:int" nillable="true" minOccurs="0"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt; </pre>

**complexType tdatetime**

diagram	
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<u>start</u> <u>end</u>
used by	<u>constraintType</u> / <u>datetime</u> <u>tdatetime</u>
source	<pre> &lt;xsd:complexType name="tdatetime"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="start" type="xsd:dateTime" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="end" type="xsd:dateTime" nillable="true" minOccurs="0"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt; </pre>

### 7.1.1.3 XML example

```

<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:nmdrm="http://www.nds.com/NDSRMS/v1.0/nmdrm.xsd">

  <SOAP-ENV:Body id="_0" SOAP-
  ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">

    <nmdrm:RtProtectContentReq>
      <Version/>
      <srvId/>
      <Source>
        <SourceContentID>230965</SourceContentID>
        <ContentName "Bond" />
        <MimeType "application/jpg" />
        <ContentDescription "nice jpg picture"/>
        <SourceContentLocation>
          <SourceLocation "http://mobile.nds.com/clearcontent"/>
          <SourceDownloadProxy/>
        </SourceContentLocation>
        <ProtectContentLocation>
          <ProtLocation "http://mobile.nds.com/protectcontent"/>
          <ProtUploadProxy/>
        </ProtectContentLocation>
      </Source>
      <MobSubsId>
        <MobSubsIdType "mobile subscriberISDN"/>
        <MobSubsIdValue "97255664541"/>
      </MobSubsId>
    
```

```
<mobile subscribermodel "Nokia6220" />
<AssetRights>
  <Price>
    <priceValue>5.5</priceValue>
  </Price>
  <Permission>
    <play>
      <constraint>
        <count>3</count>
      </constraint>
    </play>
  </Permission>
  <FLflag>0</FLflag>
</AssetRights>
</nmdrm:RtProtectContentReq>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

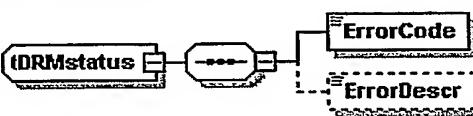
### 7.1.2 RT Protect Content Response Message

#### 7.1.2.1 Message definition

```
<message name="ProtectContentReqResponse">
  <part name="DRMstatus" type="nmdrm:tDRMstatus"/>
  <part name="CID" type="xsd:string"/>
</message>
```

### 7.1.2.2 Types used

#### complexType tDRMstatus

diagram	
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<u>ErrorCode</u> <u>ErrorDescr</u>
used by	<u>ProtectContentReqResponse/DRMstatus</u> <u>RoReqResponse/DRMstatus</u> <u>DrmPermissionReqResponse/DRMstatus</u> <u>tDRMstatus</u>
source	<pre> &lt;xsd:complexType name="tDRMstatus"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="ErrorCode" type="xsd:int"/&gt;     &lt;xsd:element name="ErrorDescr" type="xsd:string" nillable="true" minOccurs="0"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt; </pre>

#### 7.1.2.2.1 XML example

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:nmdrm="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">

  <SOAP-ENV:Body id="_0" SOAP-
    ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
    <nmdrm:ProtectContentReqResponse>
      <DRMstatus>
        <ErrorCode>0</ErrorCode>
      </DRMstatus>
      <CID "Bondnnnn@mobile.nds.com" />
    </nmdrm:ProtectContentReqResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

## 7.2 RO Transaction

### 7.2.1 RO Request Message

#### 7.2.1.1 Message definition

```
<message name="RoReqRequest">
  <part name="Version" type="xsd:string"/>
  <part name="srvId" type="xsd:string"/>
  <part name="CID" type="xsd:string"/>
  <part name="MobSubsId" type="nmdrm:tMobSubsId"/>
  <part name="mobile subscribermodel" type="xsd:string"/>
  <part name="AssetRights" type="nmdrm:tAssetRights"/>
</message>
```

#### 7.2.1.2 Types used

The same types as for RT Protect Content request are used

#### 7.2.1.3 XML example

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP-ENV:Body id="_0" SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
    <nmdrm:RoReq>
      <Version "1.0" />
      <srvId "NDS0124"/>
      <CID "Bondnnnn@mobile.nds.com" />
      <MobSubsId>
        <MobSubsIdType "mobile subscriberISDN"/>
      </MobSubsId>
    </nmdrm:RoReq>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

```
<MobSubsIdValue "97255664541"/>
</MobSubsId>
<mobile subscribermodel "Nokia6220" />
<AssetRights>
  <Price>
    <priceValue>7.5</priceValue>
  </Price>
  <Permission>
    <play>
      <constraint>
        <count>5</count>
      </constraint>
    </play>
  </Permission>
  <FLflag>0</FLflag>
</AssetRights>
</nmdrm:RoReq>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

## 7.2.2 RO Response Message

### 7.2.2.1 Message definition

```
<message name="RoReqResponse">
  <part name="DRMstatus" type="nmdrm:tDRMstatus"/>
  <part name="RightsObject" type="xsd:hexBinary"/>
</message>
```

### 7.2.2.2 Types used

The same type as for RT Protect Content response is used.

If ErrorCode parameter in the DRMstatus does not equal "OK", the RightsObject parameter in the response message is absent.

### 7.2.2.3 XML example

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:nmdrm="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">
  <SOAP-ENV:Body id="_0" SOAP-
    ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
    <nmdrm:RoReqResponse>
      <DRMstatus>
        <ErrorCode>0</ErrorCode>
        <ErrorDescr/>
      </DRMstatus>
      <RightsObject>
        <ptr>0</ptr>
        <size>0</size>
      </RightsObject>
    </nmdrm:RoReqResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

```

    </RightsObject>
  </nmdrm:RoReqResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>

```

## 7.3 DRM Permission Transaction

### 7.3.1 DRM Permission Request Message

#### 7.3.1.1 Message definition

```

<message name="DrmPermissionReqRequest">
  <part name="Version" type="xsd:string"/>
  <part name="srvId" type="xsd:string"/>
  <part name="mobile subscribermodel" type="xsd:string"/>
  <part name="MimeType" type="xsd:string"/>
</message>

```

#### 7.3.1.2 Types used

The same types as in RT request message are used.

#### 7.3.1.3 XML example

```

<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <ns1:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/">
  <ns1:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <ns1:xsd="http://www.w3.org/2001/XMLSchema">
  <ns1:nmdrm="http://www.nds.com/NDSRMS/v1.0/nmdrm.xsd">
    <SOAP-ENV:Body id="_0" SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
      <nmdrm:DrmPermissionReq>
        <Version> 1.0 </Version>
        <ns1:srvId>NDS2300 </ns1:srvId>
      </nmdrm:DrmPermissionReq>
    </SOAP-ENV:Body>
  </ns1:SOAP-ENC>
</SOAP-ENV:Envelope>

```

```
<mobile subscribermodel> Nokia6220 </mobile subscribermodel>
<MimeType> application/jpg </MimeType>
</nmdrm:DrmPermissionReq>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

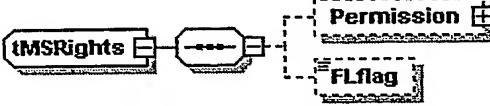
### 7.3.2 DRM Permission Response Message

#### 7.3.2.1 Message definition

```
<message name="DrmPermissionReqResponse">
  <part name="DRMstatus" type="nmdrm:tDRMstatus"/>
  <part name="mobile subscriberRights" type="nmdrm:tmobile subscriberRights"/>
</message>
```

### 7.3.2.2 Types used

#### complexType tmobile subscriberRights

diagram	
namespace	<a href="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd</a>
children	<a href="#">Permission</a> <a href="#">FLflag</a>
used by	<a href="#">DrmPermissionReqResponse</a> <a href="#">mobile subscriberRights</a> <a href="#">tmobile subscriberRights</a>
source	<pre> &lt;xsd:complexType name="tmobile subscriberRights"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="Permission" type="nmdrm:tPermission" nillable="true" minOccurs="0"/&gt;     &lt;xsd:element name="FLflag" type="xsd:unsignedByte" nillable="true" minOccurs="0"/&gt;   &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt; </pre>

The other types are the same as in the RT Response message.

### 7.3.2.3 XML example

```

<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:nmdrm="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">

  <SOAP-ENV:Body id="_0" SOAP-
  ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding">

    <nmdrm:DRM-permission-Response>
      <DRM-status>
        <ErrorCode>0</ErrorCode>
        <ErrorDescr/>
      </DRM-status>
    </nmdrm:DRM-permission-Response>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>

```

```
<mobile subscriberRights>
  <Permission>
    <play>
      <constraint>
        <count>0</count>
        <datetime>
          <start/>
          <end/>
        </datetime>
        <interval>0</interval>
      </constraint>
    </play>
    <display>
      <constraint>
        <count>0</count>
        <datetime>
          <start/>
          <end/>
        </datetime>
        <interval>0</interval>
      </constraint>
    </display>
    <execute>
      <constraint>
        <count>0</count>
        <datetime>
          <start/>
          <end/>
        </datetime>
      </constraint>
    </execute>
  </Permission>
</mobile subscriberRights>
```

```
    <interval>0</interval>
    </constraint>
  </execute>
  <print>
    <constraint>
      <count>0</count>
      <datetime>
        <start/>
        <end/>
      </datetime>
      <interval>0</interval>
    </constraint>
  </print>
</Permission>
<FL-flag>0</FL-flag>
</mobile subscriberRights>
</nmdrm:DRM-permission-Response>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

## 8 Error Handling

Table 2 below describes the errors that the SP may receive in response to a request.

**Table 2: Error Handling**

Error code	Error description
0x0000	Successful execution of the request
0x0001	Mobile Subscriber type is not defined in the DRM server
0x0002	Clear content file cannot be found
0x0003	Protected content location does not exist
0x0004	Download protocol is not supported
0x0005	Upload protocol is not supported

## Appendix A: WSDL Schema of Protocol

```

<?xml version="1.0" encoding="UTF-8"?>
<definitions name="NDSdrmPortal" xmlns="http://schemas.xmlsoap.org/wsdl/"
  xmlns:SOAP="http://schemas.xmlsoap.org/wsdl/soap/"
  xmlns:WSDL="http://schemas.xmlsoap.org/wsdl/"
  targetNamespace="http://www.nds.com/NDSDRMS/NDSdrmPortal/NDSdrmPortal.wsdl"
  xmlns:tns="http://www.nds.com/NDSDRMS/NDSdrmPortal/NDSdrmPortal.wsdl"
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/" xmlns:SOAP-
  ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:nmdrm="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd">

  <types>
    <schema targetNamespace="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd"
      xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/" xmlns:SOAP-
      ENC="http://schemas.xmlsoap.org/soap/encoding/"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:xsd="http://www.w3.org/2001/XMLSchema"
      xmlns:nmdrm="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd"
      xmlns="http://www.w3.org/2001/XMLSchema" elementFormDefault="unqualified"
      attributeFormDefault="unqualified">
      <element name="tProtectContentLocation"
        type="nmdrm:tProtectContentLocation"/>
      <complexType name="tProtectContentLocation">
        <sequence>
          <element name="ProtLocation" type="xsd:string" minOccurs="1"
            maxOccurs="1"/>
          <element name="ProtUploadProtocol" type="xsd:string"
            minOccurs="0" maxOccurs="1" nillable="true"/>
          <element name="ProtUploadProxy" type="xsd:string" minOccurs="0"
            maxOccurs="1" nillable="true"/>
        </sequence>
      </complexType>
      <element name="tSourceContentLocation"
        type="nmdrm:tSourceContentLocation"/>
    
  


```

```
<complexType name="tSourceContentLocation">
  <sequence>
    <element name="SourceLocation" type="xsd:string" minOccurs="1"
maxOccurs="1"/>
    <element name="SourceDownloadProtocol" type="xsd:string"
minOccurs="0" maxOccurs="1" nillable="true"/>
    <element name="SourceDownloadProxy" type="xsd:string"
minOccurs="0" maxOccurs="1" nillable="true"/>
  </sequence>
</complexType>
<element name="tSourceContent" type="nmdrm:tSourceContent"/>
<complexType name="tSourceContent">
  <sequence>
    <element name="SourceContentID" type="xsd:long" minOccurs="1"
maxOccurs="1"/>
    <element name="ContentName" type="xsd:string" minOccurs="1"
maxOccurs="1"/>
    <element name="MimeType" type="xsd:string" minOccurs="1"
maxOccurs="1"/>
    <element name="EncodingType" type="xsd:string" minOccurs="0"
maxOccurs="1" nillable="true"/>
    <element name="ContentProviderWeb" type="xsd:string"
minOccurs="0" maxOccurs="1" nillable="true"/>
    <element name="ContentVendor" type="xsd:string" minOccurs="0"
maxOccurs="1" nillable="true"/>
    <element name="ContentDescription" type="xsd:string"
minOccurs="0" maxOccurs="1" nillable="true"/>
    <element name="SourceContentLocation"
type="nmdrm:tSourceContentLocation" minOccurs="0" maxOccurs="1" nillable="true"/>
    <element name="ProtectContentLocation"
type="nmdrm:tProtectContentLocation" minOccurs="0" maxOccurs="1" nillable="true"/>
  </sequence>
</complexType>
```

```
<element name="tMobSubsId" type="nmdrm:tMobSubsId"/>
<complexType name="tMobSubsId">
    <sequence>
        <element name="MobSubsIdType" type="xsd:string" minOccurs="1" maxOccurs="1"/>
        <element name="MobSubsIdValue" type="xsd:string" minOccurs="1" maxOccurs="1"/>
    </sequence>
</complexType>
<element name="tdatatetime" type="nmdrm:tdatatetime"/>
<complexType name="tdatatetime">
    <sequence>
        <element name="start" type="xsd:dateTime" minOccurs="0" maxOccurs="1" nillable="true"/>
        <element name="end" type="xsd:dateTime" minOccurs="0" maxOccurs="1" nillable="true"/>
    </sequence>
</complexType>
<element name="constraintType" type="nmdrm:constraintType"/>
<complexType name="constraintType">
    <sequence>
        <element name="count" type="xsd:int" minOccurs="0" maxOccurs="1" nillable="true"/>
        <element name="datetime" type="nmdrm:tdatatetime" minOccurs="0" maxOccurs="1" nillable="true"/>
        <element name="interval" type="xsd:int" minOccurs="0" maxOccurs="1" nillable="true"/>
    </sequence>
</complexType>
<element name="tPermissionElement" type="nmdrm:tPermissionElement"/>
<complexType name="tPermissionElement">
```

```
<sequence>
  <element name="constraint" type="nmdrm:constraintType"
minOccurs="1" maxOccurs="1"/>
</sequence>
</complexType>
<element name="tPermission" type="nmdrm:tPermission"/>
<complexType name="tPermission">
  <sequence>
    <element name="play" type="nmdrm:tPermissionElement"
minOccurs="0" maxOccurs="1" nillable="true"/>
    <element name="display" type="nmdrm:tPermissionElement"
minOccurs="0" maxOccurs="1" nillable="true"/>
    <element name="execute" type="nmdrm:tPermissionElement"
minOccurs="0" maxOccurs="1" nillable="true"/>
    <element name="print" type="nmdrm:tPermissionElement"
minOccurs="0" maxOccurs="1" nillable="true"/>
  </sequence>
</complexType>
<element name="tPrice" type="nmdrm:tPrice"/>
<complexType name="tPrice">
  <sequence>
    <element name="currency" type="xsd:string" minOccurs="0"
maxOccurs="1" nillable="true"/>
    <element name="priceValue" type="xsd:float" minOccurs="1"
maxOccurs="1"/>
  </sequence>
</complexType>
<element name="tAssetRights" type="nmdrm:tAssetRights"/>
<complexType name="tAssetRights">
  <sequence>
```

```
        <element name="Price" type="nmdrm:tPrice" minOccurs="1"
maxOccurs="1"/>
            <element name="Permission" type="nmdrm:tPermission"
minOccurs="0" maxOccurs="1" nillable="true"/>
                <element name="FLflag" type="xsd:unsignedByte" minOccurs="0"
maxOccurs="1" nillable="true"/>
            </sequence>
        </complexType>
        <element name="tmobile subscriberRights" type="nmdrm:tmobile
subscriberRights"/>
        <complexType name="tmobile subscriberRights">
            <sequence>
                <element name="Permission" type="nmdrm:tPermission"
minOccurs="0" maxOccurs="1" nillable="true"/>
                <element name="FLflag" type="xsd:unsignedByte" minOccurs="0"
maxOccurs="1" nillable="true"/>
            </sequence>
        </complexType>
        <element name="tDRMstatus" type="nmdrm:tDRMstatus"/>
        <complexType name="tDRMstatus">
            <sequence>
                <element name="ErrorCode" type="xsd:int" minOccurs="1"
maxOccurs="1"/>
                <element name="ErrorDescr" type="xsd:string" minOccurs="0"
maxOccurs="1" nillable="true"/>
            </sequence>
        </complexType>
        <element name="ProtectContentReqResponse"
type="nmdrm:ProtectContentReqResponse"/>
        <complexType name="ProtectContentReqResponse">
            <sequence>
```

```
        <element name="DRMstatus" type="nmdrm:tDRMstatus"
minOccurs="1" maxOccurs="1"/>
        <element name="CID" type="xsd:string" minOccurs="1"
maxOccurs="1"/>
    </sequence>
</complexType>
<element name="RoReqResponse" type="nmdrm:RoReqResponse"/>
<complexType name="RoReqResponse">
    <sequence>
        <element name="DRMstatus" type="nmdrm:tDRMstatus"
minOccurs="1" maxOccurs="1"/>
        <element name="RightsObject" type="xsd:hexBinary" minOccurs="1"
maxOccurs="1"/>
    </sequence>
</complexType>
<element name="DrmPermissionReqResponse"
type="nmdrm:DrmPermissionReqResponse"/>
<complexType name="DrmPermissionReqResponse">
    <sequence>
        <element name="DRMstatus" type="nmdrm:tDRMstatus"
minOccurs="1" maxOccurs="1"/>
        <element name="mobile subscriberRights" type="nmdrm:tmobile
subscriberRights" minOccurs="1" maxOccurs="1"/>
    </sequence>
</complexType>
</schema>
</types>
<message name="RtProtectContentReqRequest">
    <part name="Version" type="xsd:string"/>
    <part name="srvId" type="xsd:string"/>
    <part name="Source" type="nmdrm:tSourceContent"/>
```

```
<part name="MobSubsId" type="nmdrm:tMobSubsId"/>
<part name="mobile subscribermodel" type="xsd:string"/>
<part name="AssetRights" type="nmdrm:tAssetRights"/>
</message>
<message name="ProtectContentReqResponse">
    <part name="DRMstatus" type="nmdrm:tDRMstatus"/>
    <part name="CID" type="xsd:string"/>
</message>
<message name="RoReqRequest">
    <part name="Version" type="xsd:string"/>
    <part name="srvId" type="xsd:string"/>
    <part name="CID" type="xsd:string"/>
    <part name="MobSubsId" type="nmdrm:tMobSubsId"/>
    <part name="mobile subscribermodel" type="xsd:string"/>
    <part name="AssetRights" type="nmdrm:tAssetRights"/>
</message>
<message name="RoReqResponse">
    <part name="DRMstatus" type="nmdrm:tDRMstatus"/>
    <part name="RightsObject" type="xsd:hexBinary"/>
</message>
<message name="DrmPermissionReqRequest">
    <part name="Version" type="xsd:string"/>
    <part name="srvId" type="xsd:string"/>
    <part name="mobile subscribermodel" type="xsd:string"/>
    <part name="MimeType" type="xsd:string"/>
</message>
<message name="DrmPermissionReqResponse">
    <part name="DRMstatus" type="nmdrm:tDRMstatus"/>
    <part name="mobile subscriberRights" type="nmdrm:tmobile subscriberRights"/>
```

```
</message>
<portType name="NDSdrmPortalPortType">
    <operation name="RtProtectContentReq">
        <documentation>Service definition of function
nmdrm_RtProtectContentReq</documentation>
        <input message="tns:RtProtectContentReqRequest"/>
        <output message="tns:ProtectContentReqResponse"/>
    </operation>
    <operation name="RoReq">
        <documentation>Service definition of function
nmdrm_RoReq</documentation>
        <input message="tns:RoReqRequest"/>
        <output message="tns:RoReqResponse"/>
    </operation>
    <operation name="DrmPermissionReq">
        <documentation>Service definition of function
nmdrm_DrmPermissionReq</documentation>
        <input message="tns:DrmPermissionReqRequest"/>
        <output message="tns:DrmPermissionReqResponse"/>
    </operation>
</portType>
<binding name="NDSdrmPortalBinding" type="tns:NDSdrmPortalPortType">
    <SOAP:binding style="rpc" transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="RtProtectContentReq">
        <SOAP:operation soapAction="" />
        <input>
            <SOAP:body use="encoded"
namespace="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd"
encodingStyle="http://schemas.xmlsoap.org/soap/encoding"/>
        </input>
```

```
<output>
  <SOAP:body use="encoded"
  namespace="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd"
  encodingStyle="http://schemas.xmlsoap.org/soap/encoding"/>
</output>
</operation>
<operation name="RoReq">
  <SOAP:operation soapAction="" />
  <input>
    <SOAP:body use="encoded"
    namespace="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd"
    encodingStyle="http://schemas.xmlsoap.org/soap/encoding"/>
  </input>
  <output>
    <SOAP:body use="encoded"
    namespace="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd"
    encodingStyle="http://schemas.xmlsoap.org/soap/encoding"/>
  </output>
</operation>
<operation name="DrmPermissionReq">
  <SOAP:operation soapAction="" />
  <input>
    <SOAP:body use="encoded"
    namespace="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd"
    encodingStyle="http://schemas.xmlsoap.org/soap/encoding"/>
  </input>
  <output>
    <SOAP:body use="encoded"
    namespace="http://www.nds.com/NDSDRMS/v1.0/nmdrm.xsd"
    encodingStyle="http://schemas.xmlsoap.org/soap/encoding"/>
  </output>
</operation>
```

```
</binding>
<service name="NDSdrmPortal">
    <documentation>gSOAP 2.3 rev 2 generated service definition</documentation>
    <port name="NDSdrmPortal" binding="tns:NDSdrmPortalBinding">
        <SOAP:address
location="http://www.nds.com/NDSDRMS/NDSdrmPortal"/>
    </port>
</service>
</definitions>
```

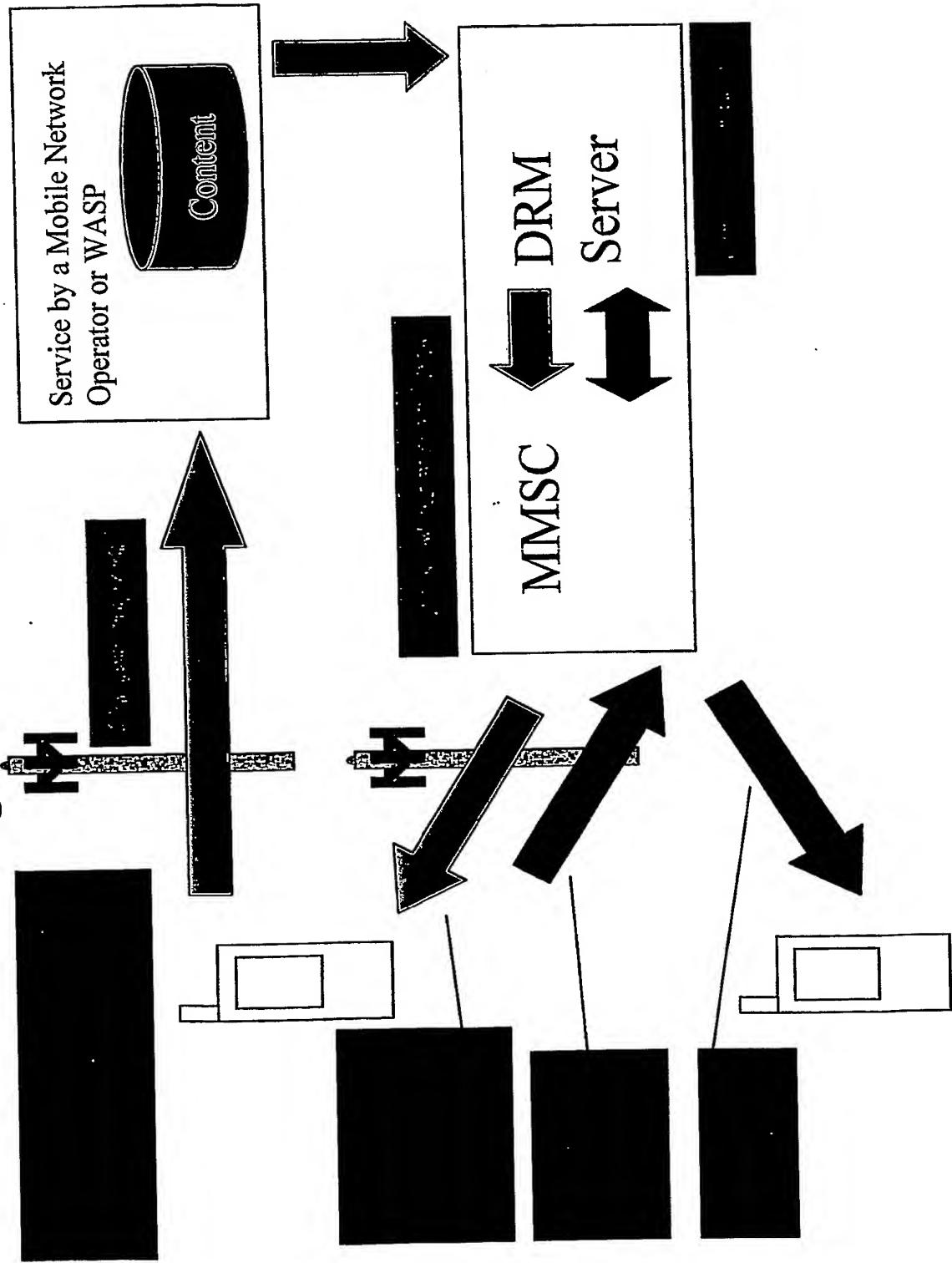
## Technical Glossary: Acronyms and Abbreviations

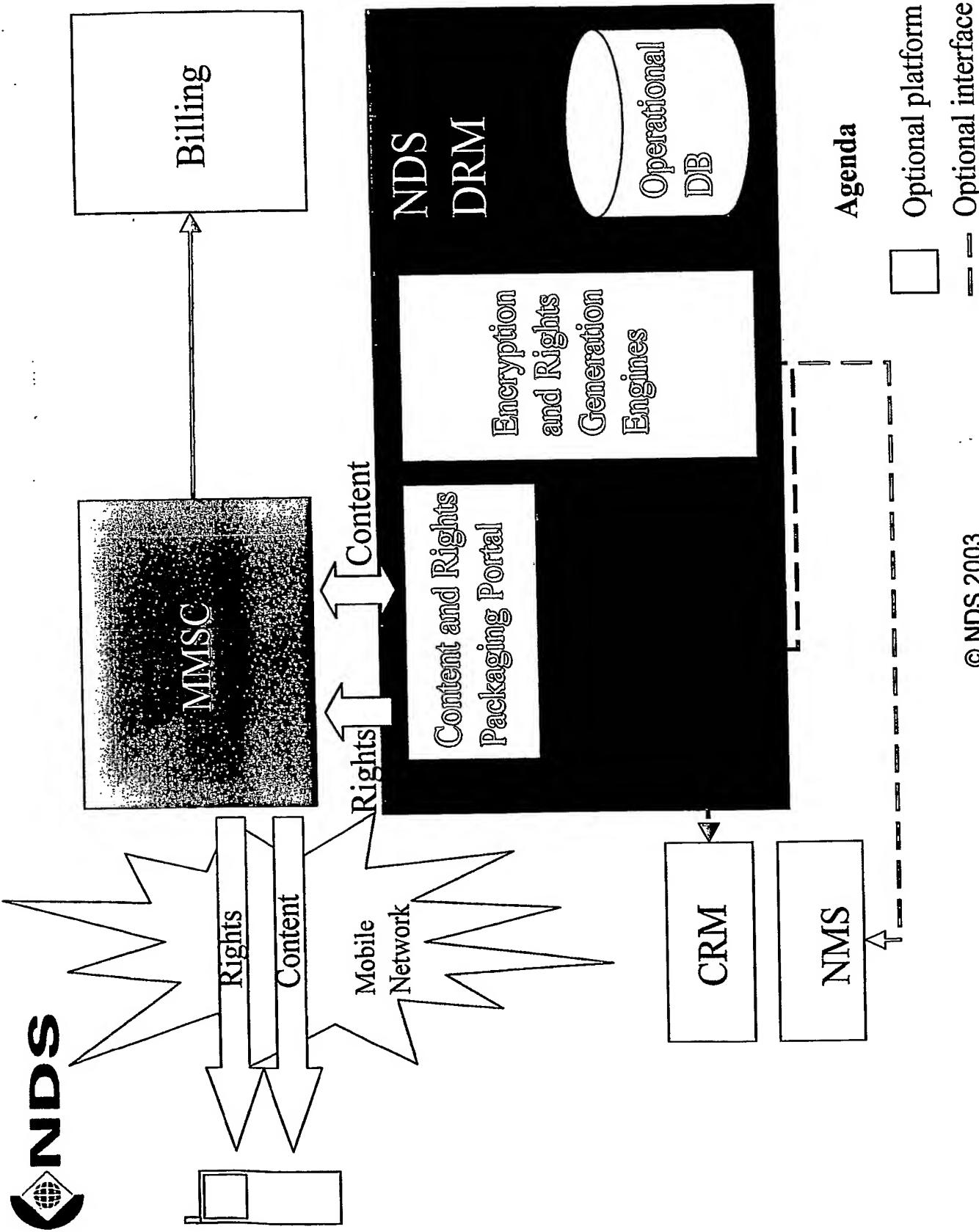
Knowledge of the acronyms and abbreviations defined in this technical glossary may be helpful to understanding the information in the present document.

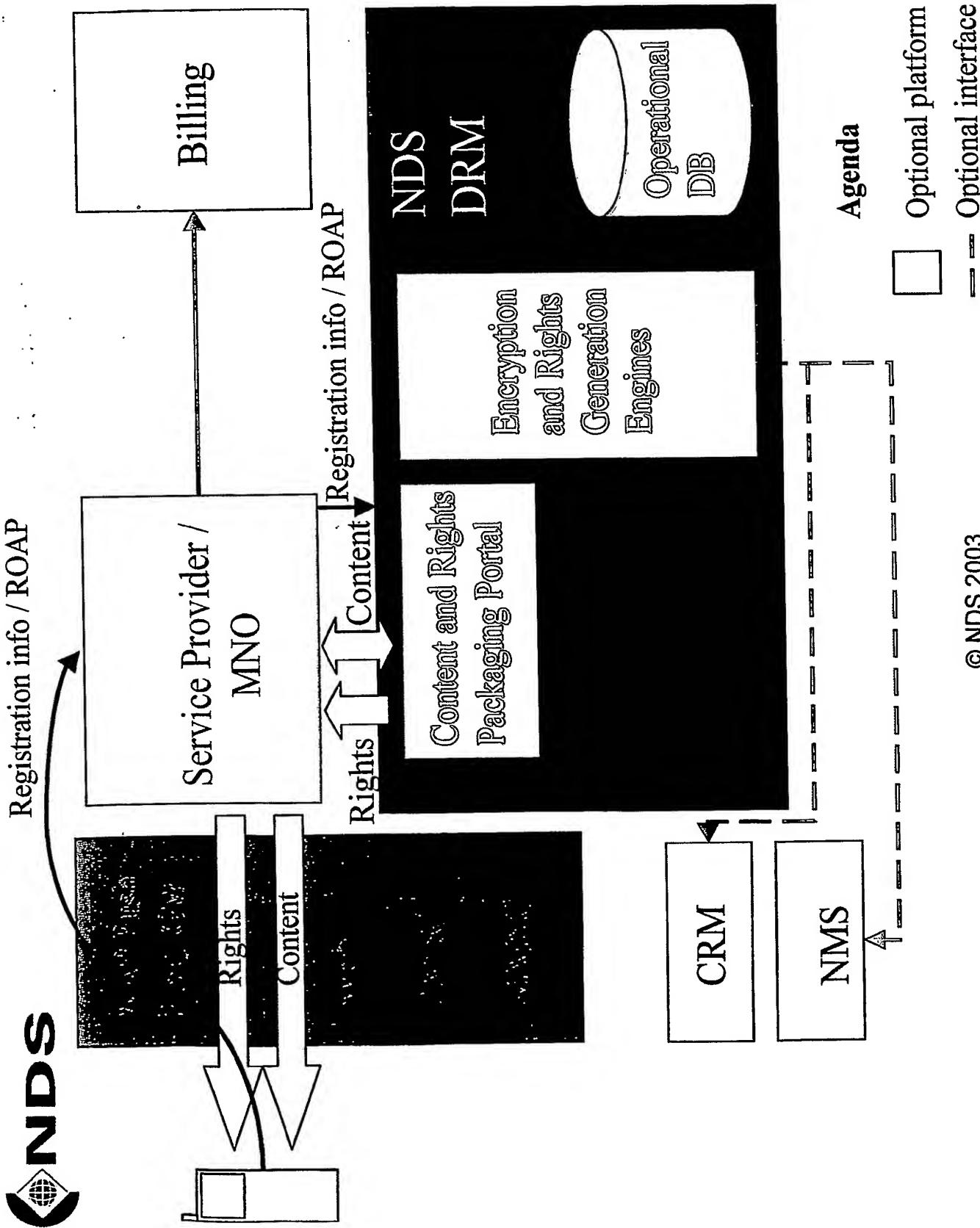
Acronym/Abbreviation	Definition
DCF	DRM Content Format
DRM	Digital Rights Management
DSIG	Digital Signature
HS	Handset
ICD	Interface Component Document
MIME	Multipurpose Internet Mail Extension
MGMS	Management Station
MS	Mobile Subscriber
MSISDN	Mobile Station Integrated Services Digital Network
OMA	Open Mobile Alliance organization
RO	Rights Object
SP	Service Provider
WBXML	WAP (Wireless Application Protocol) Binary Extended Markup Language
WSDL	Web Service Definition Language
XID	Exchange Identifier

## **APPENDIX B**

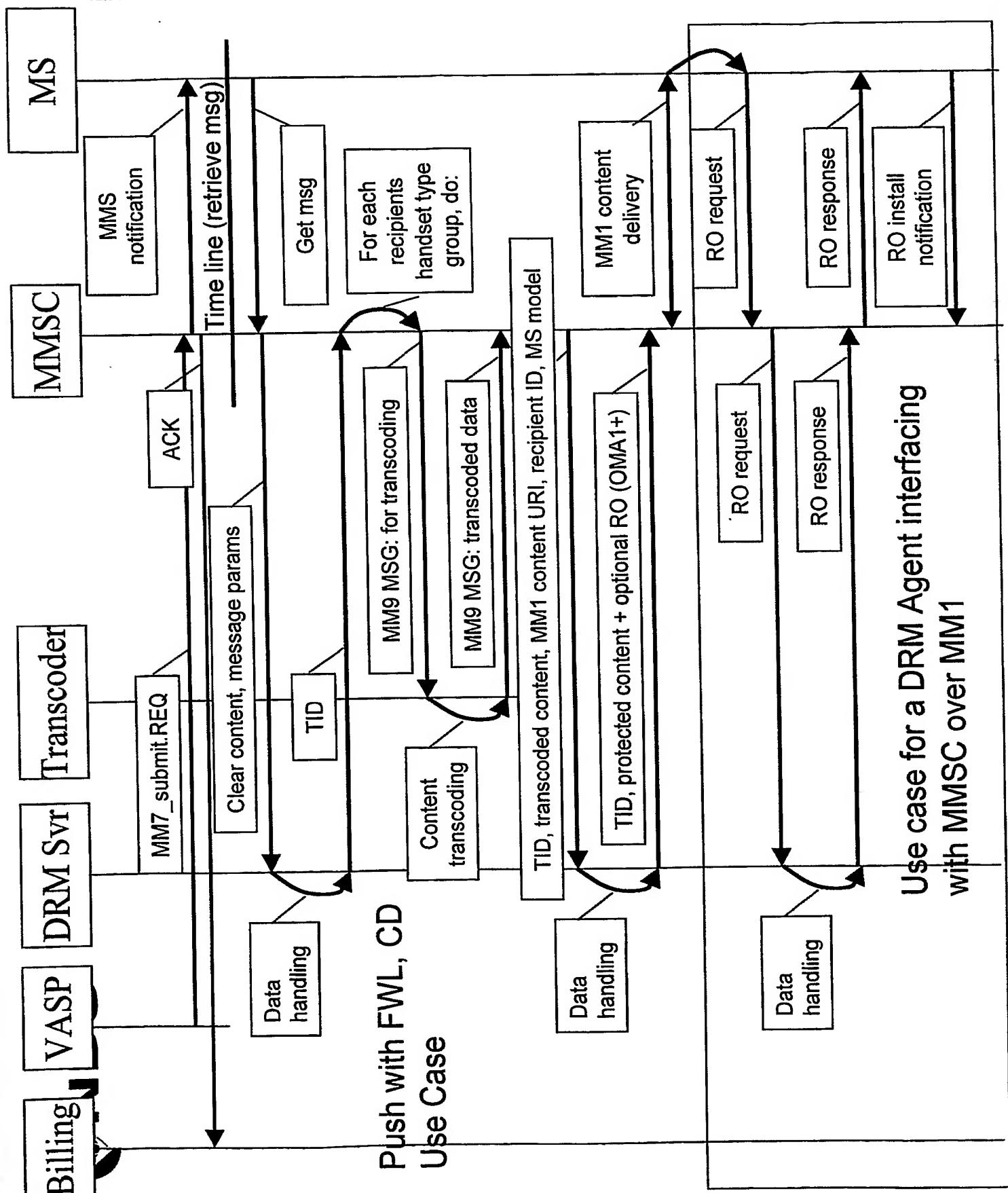
## Controlled Super Distribution of Multimedia Messages with integrated MMSC MDRM (example)

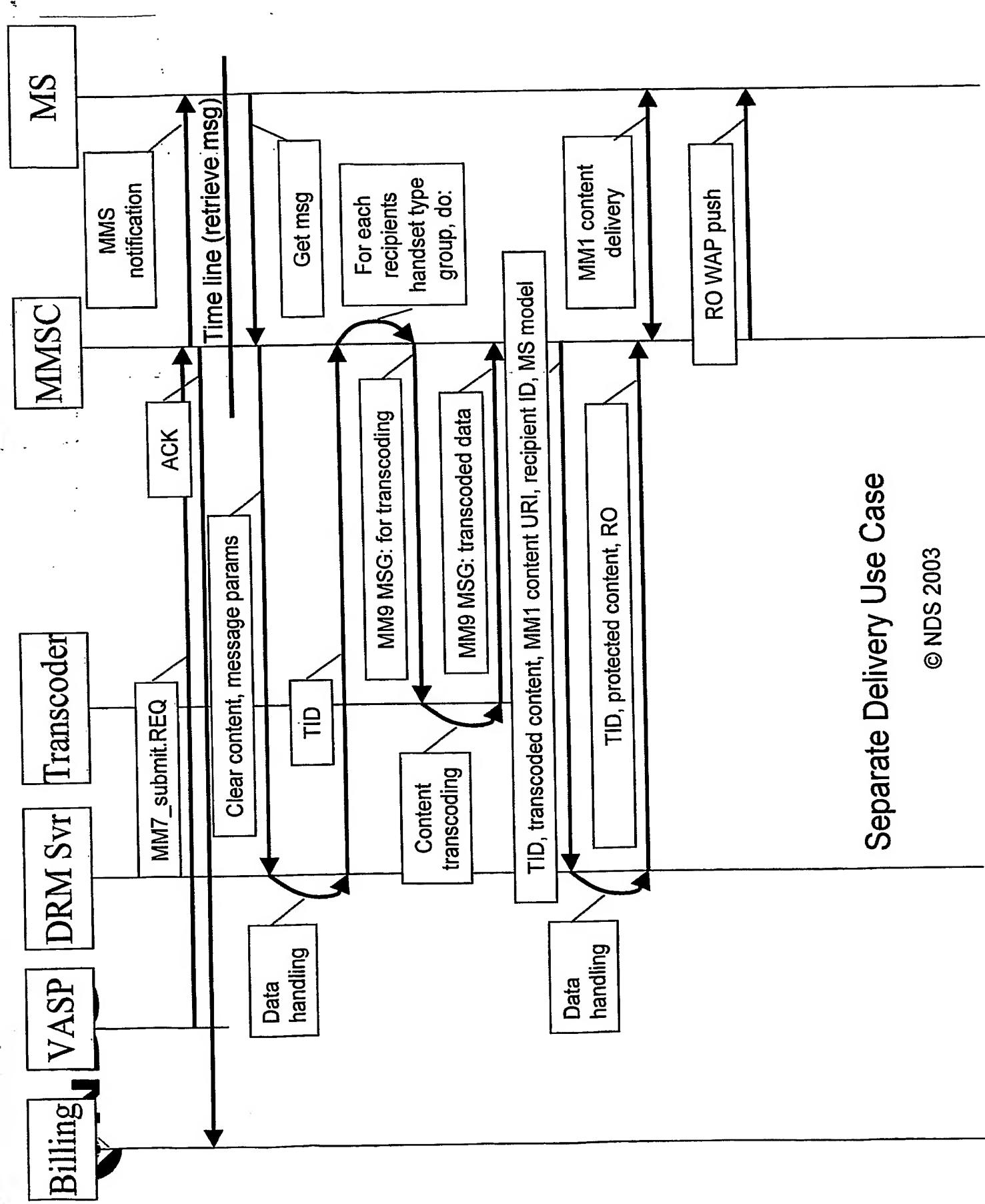






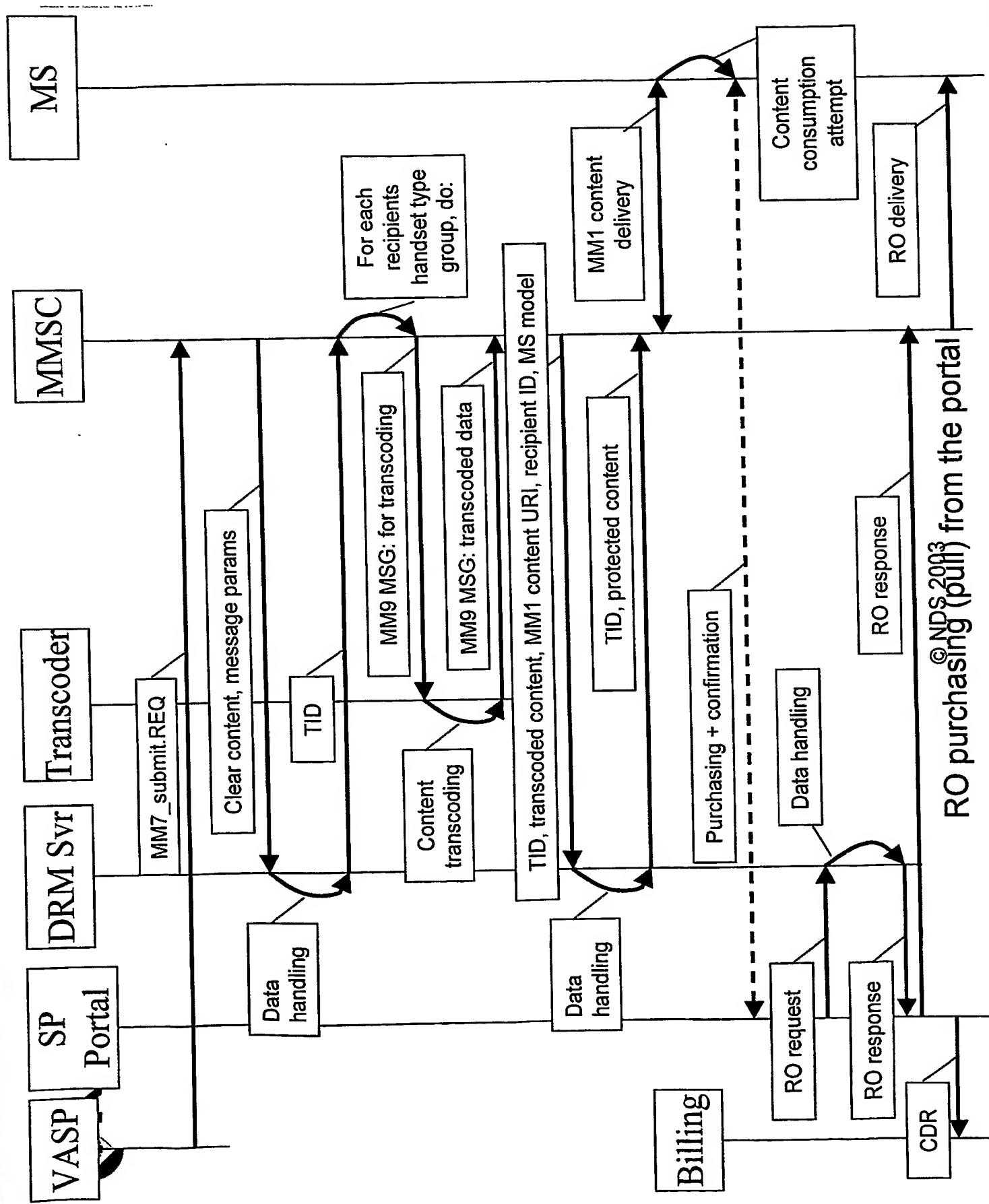
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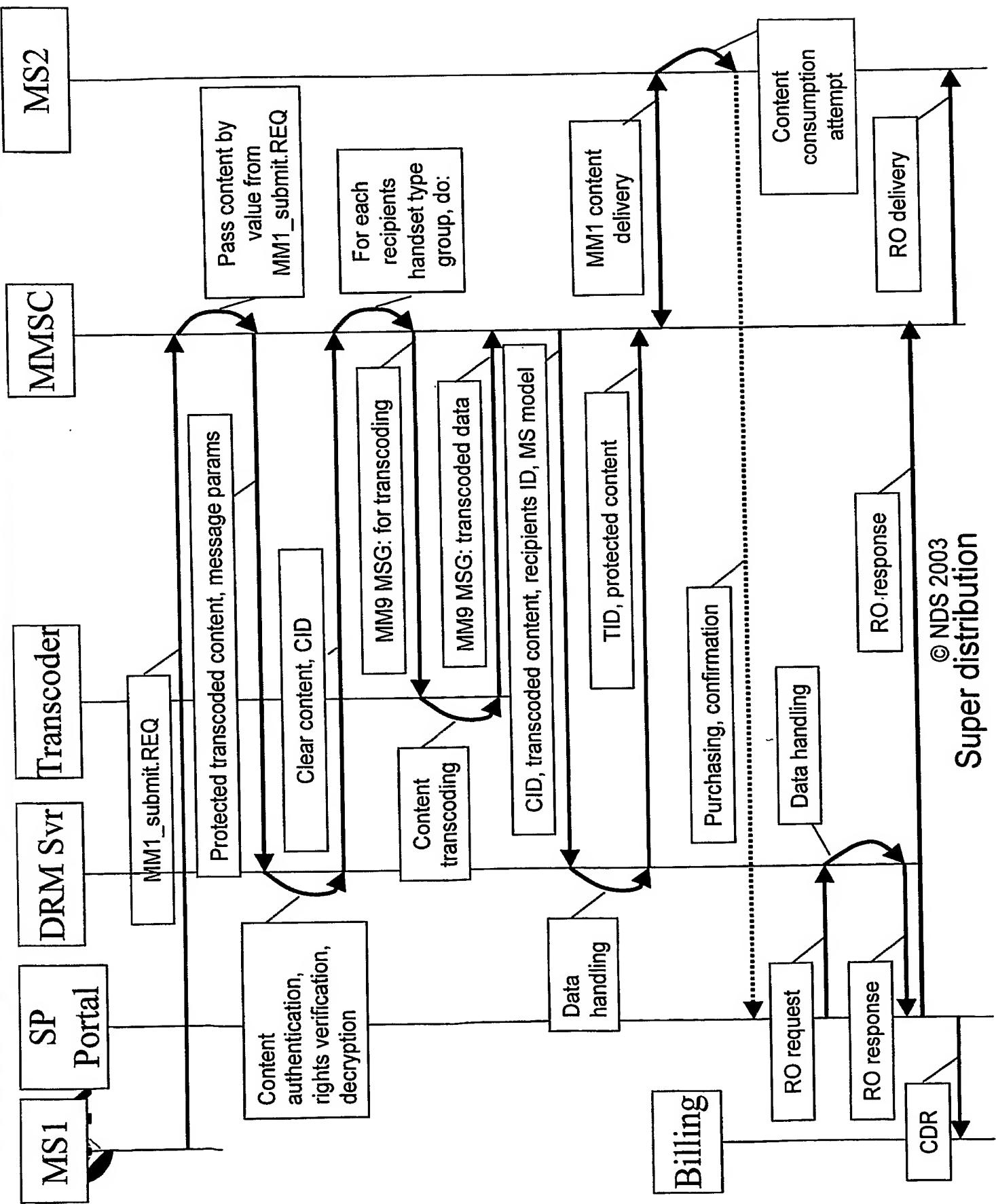




Separate Delivery Use Case

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Super distribution